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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,036	04/14/2004	James McSwiggen	04-105-A (400.149)	6045

20306 7590 03/02/2007

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EXAMINER	
BOWMAN, AMY HUDSON	
ART UNIT	PAPER NUMBER
1635	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,036	MCSWIGGEN, JAMES	
	Examiner	Art Unit	
	Amy H. Bowman	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,13-18,20,21 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,13-18,20,21 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's response filed 1/17/07 has been considered. Rejections and/or objections not reiterated from the previous office action mailed 7/17/06 are hereby withdrawn. The following rejections and/or objections are either newly applied or are reiterated and are the only rejections and/or objections presently applied to the instant application.

Applicant's arguments and/or amendments filed 1/17/07 with respect to the rejection(s) under 35 U.S.C. 112 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the instant claim amendments.

Claims 1, 13-18, 20, 21 and 31 are pending in the instant application.

Response to Arguments--Priority

Applicant asserts that the present application claims priority to, *inter alia*, 60/363,124 and points to support for some of the instant claim limitations. However, application '124 does not teach a limitation wherein "between about 50 percent and about 100 percent of the nucleotide positions of one or both strands of the siRNA

molecule are chemically modified and any purine nucleotides present in the antisense strand are 2'-O-methyl purine nucleotides", as instantly recited.

Thus, the instant claims are accorded an effective filing date of 4/11/2004.

New Objections/Rejections

Drawings

The drawings filed on 10/14/2004 appear to be replacement drawings of the drawings filed on 4/14/2004. However, the drawings filed on 10/14/2004 are objected to because each drawing sheet submitted after the filing date of the application must be identified as either "Replacement Sheet" or "New Sheet" pursuant 37 CFR 1.121(d). All changes to the drawings shall be explained, in detail, in either the drawing amendment or remarks section of the amendment paper.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not

been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 31 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a composition comprising the siRNA molecule of claim 1 in a pharmaceutically acceptable carrier or diluent, does not reasonably provide enablement for mediating RNAi via introducing siRNA molecules and a resultant treatment effect. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Specifically, the language "pharmaceutical composition" in claim 31 implies a therapeutic or treatment benefit that is not enabled. The *in vivo* inhibition and treatment effects described in the specification involve prophetic examples only and have not been reduced to practice. Amendment of the claims to read "A composition comprising the siRNA molecule of claim 1 and a pharmaceutically acceptable carrier or diluent", for example, would obviate this rejection.

Factors to be considered in a determination of lack of enablement include, but are not limited to:

(A) The breadth of the claims;

(B) The nature of the invention;

(C) The state of the prior art;

(D) The level of one of ordinary skill;

(E) The level of predictability in the art;

(F) The amount of direction provided by the inventor;

(G) The existence of working examples; and

(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)

The instant invention is drawn to a pharmaceutical composition comprising the siRNA molecule of claim 1 in an acceptable carrier or diluent.

There is no guidance in the specification as filed that teaches how to mediate RNA interference and a resultant treatment effect *in vivo*. Applicant is not enabled for mediating RNA interference *in vivo* with the instantly recited pharmaceutical composition, as delivery is known in the art to be unpredictable with regards to dsRNA duplexes.

The references cited herein illustrate the state of the art for therapeutic *in vivo* applications using dsRNA. Scherer et al. (Nat. Biotechnol., 2003, 21(12), pages 1457-1465) teach that antisense oligonucleotides (ODNs), ribozymes, DNAzymes and RNA interference (RNAi) each face remarkably similar problems for effective application: efficient delivery, enhanced stability, minimization of off-target effects and identification of sensitive sites in the target RNAs. Scherer et al. teach that these challenges have been in existence from the first attempts to use antisense research tools, and need to

be met before any antisense molecule can become widely accepted as a therapeutic agent.

Mahato et al. (Expert Opinion on Drug Delivery, January 2005, Vol. 2, No. 1, pages 3-28) teach that antisense oligodeoxynucleotides and double-stranded small interfering RNAs have great potential for the treatment of many severe and debilitating diseases. Mahato et al. teach that efforts have made significant progress in turning these nucleic acid drugs into therapeutics, and there is already one FDA-approved antisense drug in the clinic. Mahato et al. teach that despite the success of one product and several other ongoing clinical trials, challenges still exist in their stability, cellular uptake, disposition, site-specific delivery and therapeutic efficacy. Mahato et al. teach that in order for siRNAs to be used as therapeutic molecules several problems have to be overcome, including: the selection of the best sequence-specific siRNA for the gene to be targeted and the ability to minimize degradation in the body fluids and tissues.

Zhang et al. (Current Pharmaceutical Biotechnology 2004, vol. 5, p.1-7) reviews the state of the art with regard to RNAi and has this to say about use in mammalian cells. "Use of siRNA in mammalian cells could be just as far-reaching, with the applications extending to functional genomics and therapeutics. But various technical issues must be addressed, especially for large-scale applications. For instance, dsRNA can be delivered to *C. elegans* by feeding or soaking, but effective delivery of siRNAs to mammalian cells will not be so simple."

As outlined above, it is well known that there is a high level of unpredictability in the RNAi art for therapeutic *in vivo* therapeutic applications. The scope of the claims in

view of the specification as filed together do not reconcile the unpredictability in the art to enable one of skill in the art to make and/or use the claimed invention, namely a broad method of mediating RNA interference encompassing *in vivo* treatment effects with the instantly recited pharmaceutical composition.

Given the teachings of the specification as discussed above, one skilled in the art could not predict *a priori* whether introduction of RNA *in vivo* by the broadly disclosed methodologies of the instantly specification with the instantly claimed pharmaceutical composition would result in successful RNA interference and a therapeutic effect. To practice the claimed invention, one of skill in the art would have to *de novo* determine; the stability of the molecule *in vivo*, delivery of the molecule to the whole organism, specificity to the target tissue *in vivo*, dosage and toxicity *in vivo*, and entry of the molecule into the cell *in vivo* and the effective action therein. Without further guidance, one of skill in the art would have to practice a substantial amount of trial and error experimentation, an amount considered undue and not routine, to practice the instantly claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 13-18, 20, 21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayden et al. (US 2002/0187931 A1), in view of Davidson et al. (US 2004/0241854 A1), Tuschl et al. (WO 02/44321), Parrish et al. (Molecular Cell, Vol. 6, pages 1077-1087, 2000), Matulic-Adamic et al. (U.S. 5,998,203) and Olie et al. (Biochimica et Biophysica Acta, 2002, 1576, pages 101-109).

The invention of the above claims is drawn to a chemically modified double stranded double stranded siRNA molecule comprising a sense and an antisense strand wherein each strand is about 18 to about 27 nucleotides in length, the antisense strand comprises about 18 to about 27 nucleotides that are complementary to HD RNA corresponding to SEQ ID NO: 3582, the antisense strand is complementary to the sense strand, the sense strand comprises a portion of the HD RNA nucleotide sequence of about 18 to about 27 nucleotides and between about 50 and about 100 percent of the nucleotides in one or both strands are chemically modified and any purine nucleotides present in the antisense strand are 2'-O-methyl purines. The invention is further drawn to various modifications to the siRNA molecule, as well as to a composition comprising the siRNA molecule in an acceptable carrier or diluent.

Hayden et al. teach that antisense oligonucleotides can target the cellular gene or mRNA transcribed from that gene that encodes the huntingtin protein. Hayden et al. teach that the antisense oligonucleotide can be modified to exhibit desirable properties such as, for example, enhanced cellular uptake, enhanced affinity for the nucleic acid target, and increased stability in the presence of nucleases (see page 7). Hayden et al. teach that the antisense oligonucleotides comprise from about 15 to about 30

nucleotides. Hayden et al. teach compositions comprising the oligonucleotide antagonist and a pharmaceutically acceptable.

Hayden et al. do not teach siRNA duplexes specific for HD RNA and do not teach the specific modifications instantly recited.

Davidson et al. teach siRNA duplexes specific for the huntingtin gene. Davidson et al. is relied upon as further evidence that siRNA duplexes are appropriate means of inhibiting huntingtin target gene expression. Even without the Davidson et al. reference, the invention of the above claims is obvious in view of the antisense inhibition of huntingtin taught by Hayden et al.

Tuschl et al. teach siRNA duplexes consisting of two separate RNA strands, wherein each strand is 19-25 nucleotides, preferably 21 nucleotides (see pages 3 and 7). The duplexes are capable of mediating RNAi of a target gene (see page 3). One strand of the duplex is preferably 100% complementary to the target (see page 6). Tuschl et al. teach 21 nucleotide siRNA duplexes with 3' overhangs or with blunt ends wherein the two strands are fully complementary to each other and one strand is fully complementary to a transcript of a target gene (see page 44, line 25, and figure 11). Tuschl et al. teach chemical modifications at the 5' and/or the 3/ end of the dsRNA molecule (see page 5) for stabilization against degradation. The instant specification does not define the term "terminal cap" and it is not a term of the art. Therefore, the terminally modified duplexes of Tuschl et al. meet the instant limitation of having a "terminal cap". Tuschl et al. teach 2'-deoxy and 2'-O methyl modifications, as well as phosphorothioates. Tuschl et al. teach compositions comprising the siRNA and a

pharmaceutically acceptable carrier or diluent. Tuschl et al. teach that siRNAs represent a new alternative to antisense or ribozyme therapeutics.

Parrish et al. teach double stranded siRNA molecules comprising a first nucleotide sequence with complementarity to a target and a second nucleotide sequence with complementarity to said first nucleotide sequence. Parrish et al. teach 2'-deoxy-2'-fluoro pyrimidine modifications in the sense or antisense strand (see figure 5) of long dsRNA molecules.

Matulic-Adamic et al. teach double stranded short interfering nucleic acid molecules that comprise a first nucleotide sequence complementary to a target or a portion thereof, and a second sequence having complementarity to said first sequence. Matulic-Adamic et al. teach chemical modifications of the double stranded structure. Matulic-Adamic et al. teach the incorporation of chemical modifications at the 5' and/or 3' ends of the nucleic acids to protect the enzymatic nucleic acids from exonuclease degradation, which improves the overall effectiveness of the nucleic acid, as well as facilitates uptake of the nucleic acid molecules (see column 2). Matulic-Adamic et al. teach base, sugar and/or phosphate modification, as well as terminal cap moieties at the 5'-cap, 3'-cap, or both. Specifically, 3' phosphorothioates, inverted abasic moieties, and 2'-O-methyl modifications are utilized. Matulic-Adamic et al. teach 2'deoxy nucleotides and 2'-deoxy-2'-halogen nucleotides, wherein Br, CL and F are representative halogens (see column 3, for example).

Olie et al. teach that gapmer oligonucleotide chemistry, wherein three distinct regions are present, has provided antisense oligonucleotides with increased efficacy

and reduced non-antisense-related toxicity. Olie et al. added chemical modifications to ribonucleotides at either of the two ends of an oligonucleotide sequence, or the center region together with different combinations of phosphodiester/phosphorothioate backbones and investigated the effect on the activity of antisense oligonucleotides. The gapmer oligonucleotide exhibited a potent bispecific antisense activity. Olie et al. teach that gapmer chemistry is an optimal format and that these findings may have implications for the design and development of antisense oligonucleotides. Olie et al. teach that 2'-O-modifications provide additional nuclease resistance to oligonucleotides. Olie et al. teach synthesis of 20-mer chimeric antisense oligonucleotides.

It would have been obvious to one of ordinary skill in the art specifically target an siRNA to the HD gene since Hayden et al. teach antisense inhibition of HD expression and Tuschl et al. teach that siRNAs are new alternatives to antisense oligonucleotides. Antisense oligonucleotides and siRNA duplexes are both sequence specific inhibitors of target gene expression. Additionally, Davidson et al. specifically teach siRNA duplexes targeted to HD, which further evidences that siRNA duplexes are appropriate means to target and inhibit the expression of a HD gene.

Furthermore, it would have been obvious to one of ordinary skill at the time the invention was made to incorporate 2'-deoxy-2'-fluoro modifications, as taught by Parrish et al.; to incorporate phosphorothioates, 2'-O-methyl nucleotides, or 2'-deoxy nucleotides, as taught by Tuschl et al.; or to incorporate inverted deoxy abasic moieties, as taught by Matulic-Adamic et al.

One would have been motivated to incorporate each of these modifications and to incorporate them at different percentages since each of these modifications were known in the art to add beneficial properties to single or double stranded inhibitory agents, such as increasing nuclease resistance and stability of the duplex. Hayden et al. teach that antisense oligonucleotides can be modified to exhibit desirable properties such as enhanced cellular uptake, enhanced affinity for the nucleic acid target, and increased stability in the presence of nucleases. These are the same benefits taught in the siRNA art for modifying siRNA duplexes. One would have been motivated to gain such benefits for siRNAs as well as antisense oligonucleotides, as each are sequence specific inhibitors of target gene expression.

One would have been motivated to place such modifications in various locations of the siRNA duplex and at varying percentages because Tuschl et al. teach testing of siRNA duplexes to optimize the performance and Olie et al. teach that combinations of different modifications at different regions of an oligonucleotide have been tested in order to optimize oligonucleotide activity. Olie et al. teach stepwise experimentation of modifications throughout oligonucleotides in order to find the optimal configuration. Olie et al. is relied upon as evidence that it is common to experiment with different known modifications at different locations to optimize oligonucleotide activity.

Therefore, one would have been motivated to apply such a method to incorporate known modifications at various locations and different configurations, as taught by Olie et al., into the siRNA molecules of Tuschl et al. and specifically targeted to HD.

Not only did Tuschl et al. test different types of chemical modifications and siRNA activity, but Parrish et al. and Matulic-Adamic et al. each teach extensive chemical modification of double stranded nucleic acid molecules and successful inhibition of target gene expression. As evidenced by Tuschl et al., Parrish et al., and Matulic-Adamic et al., each of the instantly recited chemical modifications were known in the art to be incorporated into various antisense-based agents, including siRNAs, long dsRNAs, and ribozymes. The instant claims recite, "between about 50 percent and about 100 percent of the nucleotide positions in one or both strands of the siRNA molecule are chemically modified". About 50 percent of the nucleotide positions of one strand is about 25 percent of the nucleotide positions of the molecule. Therefore, the instant claims require about 25 percent to about 100 percent of the nucleotide positions to be chemically modified. In view of the extensive modification of double stranded inhibitory RNA molecules in the art, as discussed above, one would have been motivated to create such compounds specifically targeted to HD as well, as HD was recognized as a preferable target for antisense inhibition, as evidenced by Hayden et al.

Additionally, antisense oligonucleotides, ribozymes, and dsRNAs are each commonly used for sequence-specific mRNA knockdown and each of these encounters the same problems for effective application. Therefore, one would have been motivated to utilize the same modifications and techniques that have been utilized to overcome these problems with antisense oligonucleotides or ribozymes with siRNAs to add the same benefits to RNAi technology.

Finally, one would have a reasonable expectation of success given that Tuschl et al. teaches designing siRNA molecules to direct cleavage of known genes and the HD gene was known to be previously targeted by modified antisense oligonucleotides, as demonstrated by Hayden et al. Additionally, each of the modifications instantly claimed were known in the art to add benefits to antisense oligonucleotides, ribozymes, long dsRNA or siRNA duplexes, each of which one would reasonably expect to benefit an siRNA targeted to HD as well. Given the extensive modification of inhibitory double stranded RNA molecules in the art, as evidenced by Tuschl et al., Parrish et al., and Matulic-Adamic et al., one would have a reasonable expectation of success of modifying between about 50 percent and about 100 percent of the nucleotide positions in one or both strands.

Thus in the absence of evidence to the contrary, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and In *re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 13-21, 31 and 32 of copending Application No. 10/783,128. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of each application are directed to double stranded short interfering RNA molecules directed to the HD target gene with the same structural characteristics and chemical modifications, as well as to a composition comprising the molecule and a pharmaceutically acceptable carrier or diluent. The instant claims recite that between about 50 percent and about 100 percent of the nucleotide positions in one or both strands are chemically modified, whereas the claims of application '128 recite that about 100% of the nucleotide positions in one or both strands are chemically modified. Therefore, the subject matter is overlapping in scope and the claims are considered obvious over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy H. Bowman whose telephone number is (571) 272-0755.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Schultz can be reached on (571) 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amy H Bowman
Examiner
Art Unit 1635

JON E. ANGELL, PH.D.
PRIMARY EXAMINER

AHB